

JOINT PUB 3-34
ENGINEER DOCTRINE FOR JOINT OPERATIONS
CHAPTER III, PLANNING

A properly functioning staff extends the eyes, ears, and will of a commander by learning the commander's policies and working within them; keeping the commander informed of pertinent information; developing basic decisions into adequate plans; anticipating future needs; translating plans into orders; ensuring compliance with these orders; and supplementing the commander's efforts to secure unity of action through the command.

The Joint Staff Officer's Guide, 1993

1. **General.** The challenges of planning successful engineer missions within diverse theaters are vast and varied. Sound operational planning, however, is vital to the success of deployed forces. Understanding how the engineers affect each of the operating systems equips the planner with the background to form his plan of engineer actions. This universal application of engineers within all operating systems is very crucial at the operational level. The omission of engineer considerations in any operating system may produce a grave impact on the entire campaign plan.

2. **Considerations.**

a. **Commander's Intent (Engineer Endstate).** An established end state equips Joint Force Commanders with the framework to evaluate the different courses of action presented. This concept has been used in subsequent operations with equal success. The engineer requirements must be set by the JFC and universally applied throughout the Joint Operations Area (JOA).

In December 1992, the JTF engineer approached the JTF commander of Operation Restore Hope in Somalia to obtain the commander's intent and guidance on facility and road construction. He presented multiple options with varied construction standards. Each option had an associated resource requirement affixed to the level of work and an expected completion date.

Lieutenant General Johnston, the JTF commander, established the standards for the theater and the end state for engineer activities. This end state became the bench mark for all US unilateral activities within the theater. The end state not only served as the initial negotiation point for the transfer of responsibilities from the US to the UN, but it also became the operational date for initiation of the retrograde of US personnel and equipment from the region.

b. **Engineer Force Assessment**

(1) **Assigned Forces**

(2) **Host Nation**

(3) **Multi-national**

(4) **Civil Augmentation**

c. **Preparation of the Battlespace**

(1) **Geospatial** - The phrase “geospatial information and services” (GI&S), replaced the term “mapping, charting, and geodesy”. This change was necessitated by an increasing use of digital geospatial information on sophisticated computer workstations to perform many military functions such as navigation, mission planning, mission rehearsal, targeting, and analysis of the battlespace. digital geospatial information forms the foundation for battlespace visualization. when geospatial information is coupled with threat analysis, meteorological and oceanographic environmental intelligence, the friendly situation, and the logistics situation, the commander can more quickly grasp the view of the battlespace. This dominant view of the area in which joint forces conduct operations allows commanders at all levels to react quickly to evolving situations, and allows for friendly forces to operate inside the decision cycle of adversaries.

(2) **Intelligence**. The rapid introduction of US forces requires accurate, detailed, continuous, and timely intelligence. Engineers anticipate and provide needed topographic terrain products of likely contingency areas in support of the ongoing Intelligence Preparation of the Battlespace (IPB) process. The engineers assess infrastructure condition and availability for possible general engineering requirements, including airfields, MSRs, ports, utilities, and logistics facilities. They determine threat engineer capabilities in likely lodgment areas, including requirements for countermine and counterobstacle capabilities needed with the early-entry force. Joint Publication 3-15 “Obstacles, Mines and Barriers provides a more detailed discussion on countermine and counterobstacle capabilities.

Combat power is generated by combining the elements of maneuver, firepower, force protection, and leadership within a sound plan and then aggressively, violently, and flexibly executing the plan to defeat the enemy. The key to effectively using combat power is gathering information about the enemy and the Joint Operations Area (JOA) through reconnaissance. Reconnaissance provides current battlefield information that helps the commander plan and conduct tactical operations. Reconnaissance, when properly planned and executed, greatly enhances maneuver, firepower, and force protection. There are several types of reconnaissance mission the engineers may be called upon

to conduct, reference Army Field Manual 5-170 "Engineer Reconnaissance" for further information on types of engineer reconnaissance.

(3) **Battlespace Visualization.** Engineers, particularly through theater topographic assets, significantly aid in battlefield visualization, which leads to identifying and locating operational centers of gravity (both friendly and enemy). The analysis of topographic features, the nature and characteristics of the AO, and the creation and dissemination of special products allow operational planners to -

- Develop maneuver operations.
- Select high payoff targets.
- Acquire precise deep target information.

3. **Levels of Engineer Planning.** Engineer planning should be done at the strategic, operational, and tactical levels.

a. **Strategic and Operational.** Combatant commanders' strategic engineer planning concepts focus on mobility into the theater base and on to desired operating locations, where operational engineering planning concepts are employed. With the mobility, countermobility, and general engineering functions in mind, planners must determine the basic, but broad, mobilization, deployment, and sustainment requirements of the combatant commanders' concept of operations.

b. **Tactical.** This planning is done primarily by the service components. It includes line-item planning and involves the detailed application of the best planning factors available from historical usage data, analysis, or exercise experience. Also, planners determine the size, type and precise location of engineer units. Combatant commanders and their staffs should examine the Service components' methods, assumptions, and factors to determine their validity and to guard against duplication of effort and any tendency to establish unnecessarily high safety margins or standards of living.

4. **Special Planning Considerations**

a. **Environmental Planning Considerations.**

Joint engineering operations should be planned and conducted with appropriate consideration of their effect on the environment in accordance with applicable US and HN agreements, environmental laws, policies, and regulations. Commanders should ensure that an environmental engineer with contract support are included in the front end of planning and execution.

America's Army is constantly challenged as we approach the 21st century. How the Army meets the challenges and protects our most valuable resources-our soldiers and the environment-will determine the nation's future.

*Honorable Togo D. West,
Jr.*

The military decision-making process (MDMP) integrates environmental considerations into mission accomplishment. Staffs at the appropriate echelons must identify and analyze environmental effects of military actions, as well as characteristics of the environment that influence friendly or threat operations. Staff consideration of environmental impact starts with the mission analysis and the initial intelligence preparation of the battlespace (IPB) and continues through the orders production process.

Environmental protection begins by estimating the environmental situation in the area of interest. During operational planning, this estimate may be a formal effort within the context of the IPB, a separate study on the characteristics of the area of operations, or an informal review of the environmental considerations and issues contained in the higher headquarters operations plan or order.

(1) **Stewardship.** All joint civil engineering operations planned and conducted within the United States and US territories and possessions will be conducted in compliance with all applicable Federal, state, or local environmental laws and standards. This includes the preparation of adequate environmental documentation and coordination with the Federal and state environmental, natural resources, and historic preservation agencies. Early planning is essential to ensure that all appropriate environmental reviews have been completed in accordance with DODD 6050.7, "Environmental Effects Abroad of Major Department of Defense Actions," and the Overseas Environmental Baseline Guidance and applicable Final Governing Standards, and that no HN environmental restrictions are required by the status-of- forces agreement or other international agreements. Additionally, a separate annex or appendix for ensuring that proper attention is given to environmental considerations should be included in each OPORD and OPLAN under which units will deploy.

Environmental responsibility involves all of us. The environmental ethic must be part of how we live and how we train. Protection of the environment is the key to ensuring we can continue to conduct tough, realistic training and keep the Army training and ready in the future.

General Dennis Reimer, CSA

Insert Elements of Environmental Planning Figure here. Joint Pub 4-04, Page II-8

(2) **Joint Environmental Management Board (JEMB).** The JEMB establishes policies, procedures, priorities, and oversight of environmental management in the JOA. It prepares the Environmental Management Support Plan and provides environmental management input to JTF mission analysis, logistics estimates, OPLANS and OPORDS. The JEMB also monitors compliance with environmental protection standards. The JTF Engineer is the JEMB director and the members are the service components and special activities, e.g. legal, civil affairs, surgeon, logistics, and comptroller. The JTFEC

acts as the executive agent and provides administrative support for the preparation of preliminary products for deliberation and the final products.

(3) **Environmental Restoration.** Every attempt must be made to maintain the environment in its current state. At times this may not be possible or the area a unit occupies may have been previously contaminated. Staffs must plan to clean up sites that have been previously contaminated. Restoration is normally conducted by environmental staffs and contractors; however, units may be required to assist in the planning and execution if contaminated sites are located in their areas of responsibility.

(4) **Waste Disposal.** When entering into an operation the Status of Forces Agreement (SOFA) or other entry agreement should clearly state the requirement for the disposal of hazardous waste created by US Forces. This agreement can include the use of commercial contractor for the haul and disposal of such material. The principle of minimizing use of hazardous materials and resulting hazardous waste will be followed whenever possible. Each unit should establish a hazardous waste collection point. Waste must be properly classified as to the potential for harm to individuals or the environment. Waste oil, spent fuel, batteries, acids, anti-freeze, solvents and chemical components must be properly labeled and packaged for accumulation and handling. Components will deliver the identified waste to designated collection points, properly identified and packaged. The Defense Logistics Agency (DLA), or its designated agent is responsible for designating pick-up collection points and evacuating the hazardous waste disposal site.

b. **Funding and Resource Management Considerations.** Lack of knowledge of funding authorities, interpretations and references can quickly become a “show stopper” to providing timely engineering support. The first critical step in initiating construction operations is understanding the applicability of the necessary authorities and references, because without statutory authorization and appropriation of funds DOD is not authorized to undertake construction or to expend funds. JTF engineer personnel should pay particular attention to those funding lines associated with construction in emergencies.

(1) **Executive Agency.**

(2) **Statutory Construction Funding Limitations.** Construction material management is an important issue because of the relative high value and scarcity of material in a contingency operation. The timely procurement and transportation into and within a theater during the early stages of an operation are critical to the productivity of engineer organizations and the success of the operation. Procedures must be in place to maximize engineering effort and accountability and minimize waste.

(3) **Contingency Funding.**

c. **Military Operations Other Than War (MOOTW).** Plans for MOOTW are prepared in a similar manner as plans for war. The mission analysis and command estimate processes are as critical in planning for MOOTW as they are in planning for war. Of particular importance in the planning process for MOOTW is the development of a clear definition, understanding, and appreciation of all potential threats.

(1) **Mobility/Counter mobility** - Although, counter mobility operations may not be a factor in MOOTW they should still be considered as possible operations if the operation escalates to a higher threat level. If this occurs a new rules of engagement will most likely be written. Mobility operations are a part of every operations and the process for planning mobility operations should not change. Engineers will still be required to open roads, airfields, and bridges, however, the rules of engagement may only allow certain ones to be cleared by US forces.

(2) **Survivability** -

(3) **General Engineering** -

(4) **Topography** - The importance of topography should not be overlooked. This is particularly true in multinational operations, where it is essential that maps, charts and support data (to include datum and coordinate system to be used) are coordinated in advance. The accuracy, scale, and currency of foreign maps and charts may vary widely from US products. Additionally, release of US mapping materials may require foreign disclosure approval.

5. **Engineer Planning Phases.**

a. **Predeployment.**

(1) **Transition.** Successful combat operations are designed to end a war quickly. When hostilities cease or a truce occurs, deployed forces transition to a period of postconflict. During the planning and execution phases commanders must understand that redeployment can be a significant engineer challenge, particularly when terminating overseas contingencies. Transition can occur even if combat operations are still underway in other parts of the theater.

(2) **Termination.** When terminating operations the objective is to continue to protect the force and quickly redeploy forces that are no longer needed. Engineers conduct various post hostilities missions, such as constructing camps for displaced personnel, constructing EPW camps,

developing potable-water supplies, restoring utilities, rebuilding roads and bridges, and marking/clearing minefields and, on a limited basis, UXO. Engineers focus on constructing or repairing redeployment facilities and staging areas, to include washracks and equipment holding and sterile customs-inspection facilities. Engineers also may conduct -

- Force protection.
- Sea-port and airport facilities maintenance.
- Battlefield cleanup.
- Supply route and facility maintenance.
- Establish the HN infrastructure.
- Prepare forces for redeployment.
- Assist in demining.
- Destroy enemy material and weapons.

b. **Deployment and Sustainment.** Short of an invasion of the US, the first major challenge in crisis response is mobilizing and deploying into the theater. This is particularly true for engineers whose force structure is largely made up from the reserve forces (about 3/4 of the engineer force is reserve forces). Also factored into the mobilization process is the availability of space on the fast sealift ships (FSS), the commercial ready airlift fleet (CRAF), and the military fleet within the air mobility command.

(1) **Lines of Communication (LOC).** Once deployed, engineers assist in establishing and maintaining the infrastructure necessary for sustaining military operations in theater. Sustainment tasks include construction and/or repair of existing logistics support facilities, supply routes, airfields and heliports, railroads, ports, water wells, power plants, electrical distribution expertise and pipelines. It begins with the initial reception of the force-projection forces (receiving equipment and soldiers). It is maintained throughout the operation, providing the infrastructure for the logisticians to sustain the force and ends with the support structure in place to redeploy the force.

(2) **Bed-down Facilities.** (mention force provider) If force protection is relevant in most stability and support operations, force bed-down is applicable to all operations. Providing housing for the US projection force is an engineer function, whether it is building base camps or leasing facilities that will house soldiers. The housing requirements go beyond tent floors or strong-backed tents and includes facilities for;

- Personal hygiene.
- Messing.
- Sanitation.
- Administrative functions.
- Morale, welfare, and recreation (MWR).

- Logistics.

Landfill operations and environmental support are also among force bed-down requirements. Continual upkeep of camps in protracted deployments is also an engineer function that is defined as Real Property Maintenance Activities (RPMA).

c. **Post Hostilities.**

d. **Redeployment.**

(1) **Materials Turnover**

(2) **Database Turnover. Geographic Intelligence Support (GIS)**

Database Turnover. Minefield Data Turnover. During Joint Minelaying Operations tracking of all minefields whether in place by friendly or enemy is essential. The Minelaying Operations (MINEOPS) report is used to exchange information between all components and joint headquarters. It provides the location, characteristics, and status of component Services' minelaying operations. It is also used to request, task, modify, report, plan, and approve minelaying operations, as appropriate. The report format is specified by the Joint Interoperability Tactical Command and Control System (JINTACCS) and is contained in annex 124, Chapter 3, "Joint User Handbook For Message Text Formats," and listed in Appendix A, of Joint Pub 3-15. Minefield records must be prepared using methods that are consistent and well understood. The records must include all known information required in the specified formats. The level of information will vary based on friendly versus enemy emplaced minefields and the type of emplacing systems utilized. These records facilitate troop safety, future operations, minefield turnover, and clearing operations when the hostilities are concluded.

d. **Recovery Operations.**

6. **Planning Process.** The particular procedures used in joint planning depend on the time available to accomplish them. When time is not a critical factor, a process called deliberate planning is used. When the time available for planning is short and the near-term result is expected to be an actual deployment and or employment of armed forces, the planner uses crisis action procedures. The overall procedures are the same for both deliberate and crisis action planning:

- Receive and analyze the task to be accomplished,
- Review the enemy situation and begin necessary intelligence collection,
- Develop and compare alternative courses of action,
- Select the best alternative,

- Develop and get approval for its concept,
- Prepare a plan, and
- Document the plan.

The amount of time available significantly influences the planning process. The two different methods of planning are described in Joint Publications, 5-0, Doctrine for Planning Joint Operations and 5-00.2, Joint Task Force Planning Guidance And Procedures.

a. **Deliberate Planning.** Deliberate planning is accomplished in five phases: initiation, concept development, plan development, plan review, and supporting plans. Joint Pub 5-0, Section B, page III-3 discusses the Deliberate Planning Process in detail. Deliberate planning prepares for a possible contingency based upon the best available information and using forces and resources apportioned for deliberate planning by the Joint Strategic Capabilities Plan (JSCP). It relies heavily on assumptions regarding the political and military circumstances that will exist when the plan is implemented. Deliberate planning is conducted principally in peacetime to develop joint operation plans for contingencies identified in strategic planning documents.

b. **Crisis Action Planning (CAP).** A crisis is defined, within the context of joint operation planning and execution as an INCIDENT or SITUATION involving a threat to the United States, its territories, citizens, military forces, and possessions or vital interests that develops rapidly and creates a condition of such diplomatic, economic, political, or military importance that commitment of US military forces and resources is contemplated to achieve national objectives. CAP is based on current events and conducted in time-sensitive situations and emergencies using assigned, attached, and allocated forces and resources. Crisis action planners base their plan on the actual circumstances that exist at the time planning occurs. They follow prescribed CAP procedures that parallel deliberate planning, but are more flexible and responsive to changing events.

Insert JOPES Deliberate Planning Process and CAP Process Functional Alignment here. Joint Pub 5-0, Page III-2

c. **Engineer Operations Plan.**

7. **Conclusion.** Anticipatory planning is an absolute requirement. The successful engineer preparation of the theater depends upon the ready availability of units, equipment and material -- including access to reserve forces. When military forces of the United States are called upon to support our national interest, we must have the capability to project elements of power from the continental United States or from overseas bases into the area of operations. Engineers must participate in the operational planning process from the onset of

crisis planning since a surge of engineer effort is required at the beginning of any operation.